

DISPARITIES IN MICHIGAN'S ASTHMA BURDEN

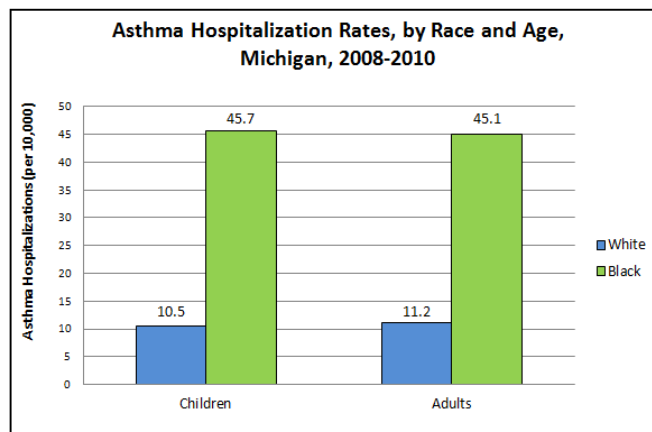
Michigan is proud to have made strides to improve asthma health in our communities, but there still exist significant disparities in the asthma burden among different racial and socioeconomic populations in our state. These differences are influenced by multiple factors: access to health care, genetics, environments, and knowledge of asthma control. Efforts to reduce the burden of asthma across the state and improve the health of all Michiganders must address these disparities.

Racial Disparities in Michigan's General Population

Asthma Hospitalization Rates

- Black child and adult asthma hospitalization rates are significantly higher than rates for white children and adults*
- Male children are hospitalized for asthma at a rate 61% higher than female children* (data not shown)
- Female adults are hospitalized for asthma 2.3 times as often as male adults (data not shown)*

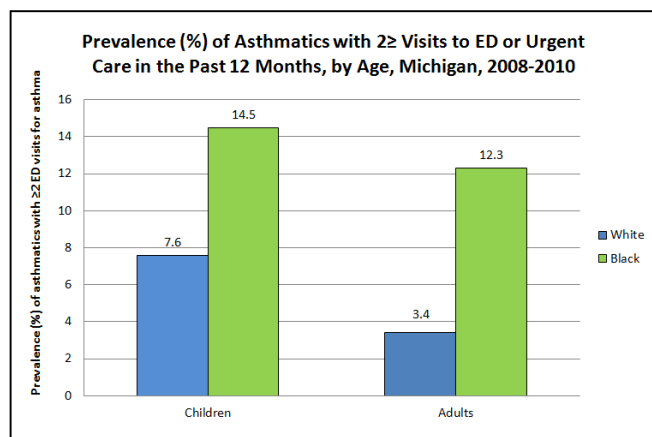
Data source: Michigan Inpatient Database, 2008-2010



Asthma Emergency Visits

- Black children had a higher prevalence of ≥ 2 ED or urgent care visits in the past 12 months than white children
- Black adults had significantly higher prevalence of ≥ 2 emergency asthma visits than white adults*
- Female adults visited emergency asthma care more than twice as often as male adults (data not shown)

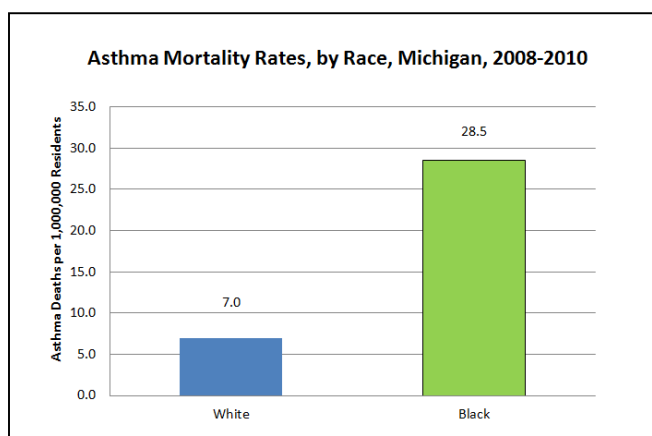
Data source: Michigan Asthma Call Back Survey, 2008-2010



Asthma Mortality

- Asthma deaths for Blacks occur at a rate 3.9 times that of Whites*
- Overall asthma mortality rates in Michigan have decreased by half since 1990 (data not shown), but significant disparities still exist
- For both Blacks and Whites in Michigan, the rate of asthma deaths is higher among adults than among children (data not shown)*

Data source: Michigan Resident Death Files, 2008-2010



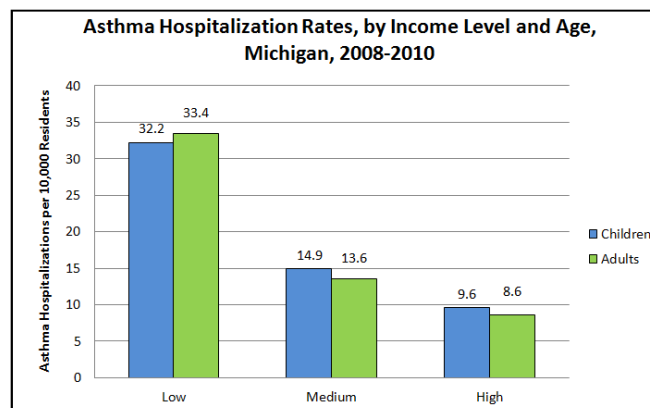
* Statistically significant difference, $p < 0.05$.

Socioeconomic Disparities in Michigan's General Population

Asthma Hospitalizations

- Children living in low income areas are hospitalized for asthma 3.3 times as often as children living in high income areas*
- Adults living in low income areas are hospitalized for asthma 3.8 times as often as adults living in high income areas*
- Asthma hospitalization rates in all income levels have decreased significantly, but large disparities still exist

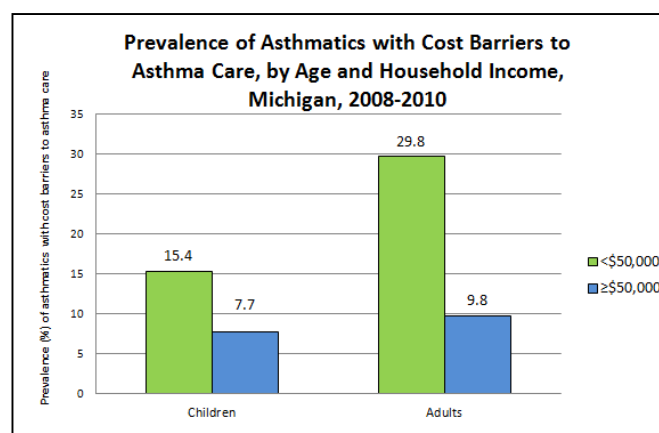
Data source: Michigan Inpatient Database, 2008-2010



Cost Barriers to Asthma Care

- Barriers to asthma care include inability to access primary care, asthma specialist care, or asthma medication due to cost
- The prevalence of adults with cost barriers to asthma care in the past 12 months in households earning less than \$50,000 annually is three times higher than among adults in households earning more than \$50,000 annually*
- Children in households earning less than \$50,000 annually are twice as likely to experience cost barriers to asthma care as children in households earning more than \$50,000 annually

Data source: Michigan Asthma Call Back Survey, 2008-2010

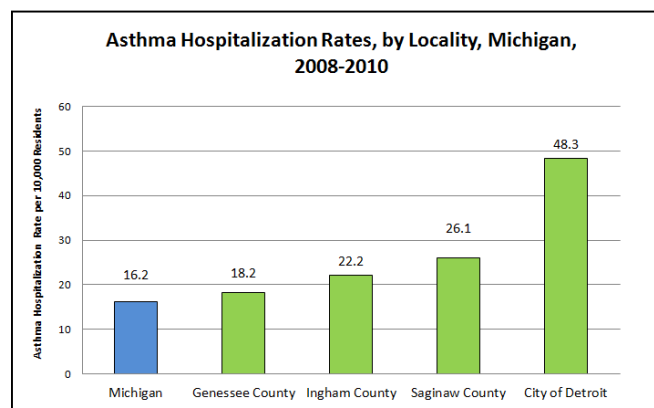


Geographic Disparities in Michigan's General Population

Asthma Hospitalizations in High Burden Communities

- Genesee, Ingham, and Saginaw Counties, and the City of Detroit, have asthma hospitalization rates significantly higher than the rest of the state*
- Detroit's asthma hospitalization rate is three times higher than Michigan's overall rate*

Data source: Michigan Inpatient Database, 2008-2010



* Statistically significant trend, $p < 0.05$.

Medicaid Population[◇] of Michigan, Children, <18 Years

		Prevalence (%) Persistent Asthma [†] 2005	Prevalence (%) Persistent Asthma [†] 2010	Comment
Sex	Male	5.9	6.4	The prevalence of persistent asthma is 39% higher for male children than female children.**
	Female	4.3	4.6	
Race	White	5.1	5.3	The prevalence of persistent asthma is 17% higher for black children than white children.**
	Black	5.6	6.2	
County	Urban	5.1	5.5	The prevalence of persistent asthma is 5% higher for children in non-urban counties than
	Rural	5.4	5.8	
		Emergency Department Visit Rate (per 10,000)	Emergency Department Visit Rate (per 10,000)	Comment
Sex	Male	240.4	236.4	Male children visit the emergency department at a rate 42% higher than female children.**
	Female	164.7	166.5	
Race	White	113.9	113.8	Black children visit the ED for asthma at a rate 2.2 times that of white children.**
	Black	351.6	363.3	
County	Urban	225.3	222.0	Children in urban counties visited the ED for asthma twice as often children in non-urban counties.**
	Rural	103.9	108.9	
		Hospitalization Rate (per 10,000) 2005	Hospitalization Rate (per 10,000) 2010	Comment
Sex	Male	47.3	27.8	Male children are hospitalized for asthma at a rate 56% higher than female children.**
	Female	29.9	17.8	
Race	White	21.1	13.1	Black children visit the hospital for asthma at a rate 3.0 times that of white children.**
	Black	68.6	40.3	
County	Urban	43.3	25.2	Children in urban counties are hospitalized for asthma at a rate 2.1 times that of children in non-urban counties. **
	Rural	18.6	12.0	

[◇]Population restricted to those children continuously enrolled in Medicaid with full coverage and no other insurance.

[†]Persistent asthma is defined according to HEDIS® specifications: in the year prior to the prevalence measurement year having (1) ≥ 4 asthma medication dispensing events OR (2) ≥ 1 emergency department visits for asthma OR (3) ≥ 1 hospitalization for asthma OR (4) ≥ 4 outpatient visits for asthma and ≥ 2 asthma medication dispensing events. (National Committee for Quality Assurance. Use of Appropriate Medications for People with Asthma. *HEDIS® 2003, Volume 2: Technical Specifications*. Washington, DC; 2003.)

**Based on comparisons of 2005 and 2010 data, prevalence or rate ratio significantly different than 1.0, p<0.05.

NOTES

Definitions:

- Asthma hospitalization defined as a primary discharge diagnosis of asthma, ICD-9-CM=493.XX. These data represent the number of inpatient hospitalizations for asthma, not the number of persons hospitalized for asthma.
- Asthma death defined as the primary cause of death being asthma, ICD-9=493 or ICD-10=J45 or J46.
- Asthma emergency department visit defined as a primary diagnosis of asthma, ICD-9-CM=493.XX. These data represent the number of emergency department visits for asthma, not the number of persons visiting the emergency department for asthma.
- Medicaid population of children <18 is restricted to those children continuously enrolled in Medicaid with full coverage and no other insurance.
- Persistent asthma is defined according to HEDIS® specifications: in the year prior to the prevalence measurement year having (1) ≥ 4 asthma medication dispensing events OR (2) ≥ 1 emergency department visits for asthma OR (3) ≥ 1 hospitalization for asthma OR (4) ≥ 4 outpatient visits for asthma and ≥ 2 asthma medication dispensing events. (National Committee for Quality Assurance. Use of Appropriate Medications for People with Asthma. *HEDIS® 2003, Volume 2: Technical Specifications*. Washington, DC; 2003.)
- Income of area of residence is defined by the median household income by zip code from the US Census 2010: High income=top 20%, low income = bottom 20%, and all others considered middle income areas.
- Urban counties are defined as those including a Metropolitan Statistical Area (MSA) per the U.S. Department of Commerce Census Bureau, Michigan Metropolitan Areas, Counties, and Central Cities. (<http://www.census.gov/geo/www/mapGallery/stma99.pdf>)

Methods:

- All rates are age adjusted to the 2000 US standard population by the direct standardization method. Prevalence of persistent asthma for children in Medicaid is also age adjusted.
- A prevalence or rate ratio is considered statistically significant if its confidence interval does not contain 1.0, the value for no association.
- Trend analysis was conducted for mortality rates and select hospitalization rates for the general population of Michigan. The Spearman Correlation Coefficient is used to test for statistical trends in asthma rates over time, with a p-value <0.05 considered statistically significant. This method was chosen since it makes no assumption about the underlying distribution of the data analyzed and gives an overall test of monotonic increasing or decreasing of rates over time.

Data Sources:

- Michigan Inpatient Database, 1990-2010, Michigan Department of Community Health.
- Michigan Resident Death File, 1990-2010, Michigan Department of Community Health.
- Managed Care Production Encounters, Fee for Service Paid Claims, Medicaid Beneficiary Files, Data Warehouse, 2001-2010, Michigan Department of Community Health.
- Michigan Population Estimates, 1990-2010, Michigan Department of Community Health.
- Michigan Asthma Call Back Survey, 2008-2010, Michigan Department of Community Health

FOR MORE INFORMATION

About *Disparities in Michigan's Asthma Burden*, contact the Epidemiology Services Division and the Michigan Department of Community Health, 517.335.8806.

SUGGESTED CITATION:

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Michigan Department
of Community Health



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